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Tourism Spending-Economic Growth Causality in 49 Countries: A Dynamic Panel Data Approach

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Abstract

Tourism is an important economic engine. According to the World Tourism Organization (UNWTO), the international tourism has grown steadily over the last sixty years; where it constitutes one of the leading sectors with the fastest growing in the world. "Tourism has become one of the main items of international trade. Today, international tourism is become the fourth largest source of export revenue after the oil industry, chemical and automotive. This study analyzes the relationship between tourism spending and economic Growth in 49 countries, using the panel co-integration and panel Granger causality tests. The results show a significant way which is a co-integrating relationship between economic Growth and tourism spending. The results also indicate bidirectional causality between tourism spending and economic Growth, which could be a good tool to prioritize the allocation of resources across industries to ensure a better tourism in general and economic outcomes. Investors and managers may also use this causality to identify the best time for investment and business strategies by observing the evolution of the performance of higher temporal hierarchy industries.

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Keywords: Panel Co-integration, Long-term, Tourism spending and economic Growth, FMOLS and DOLS Estimators, Panel Granger Causality;

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1. Introduction

The tourist industry and traveling currently have become the largest and most diverse sector from worldly affairs. According to the World Tourism Organization (UNWTO), international tourist arrivals and revenues worldwide in 2013 were 1087 million and 1159 billion U.S. dollars, respectively (World Tourism Organization, 2014). The international tourist arrivals worldwide are expected to increase by 3.3% per year between 2010 and 2030, to reach 1.8 billion arrivals by 2030, according to the prospective long-term study of UNWTO tourism in 2030. Where, it is generally recognized that tourism plays a vital role in the economy of many state in the worldwide. According to (Gee, 1999), the magnitude of this industry results directly by the way that serves as a principal source to generate income, employment, private sector Growth and infrastructure development in umpteen countries. Due to these advantages, tourist development doesn't only stimulate the Growth of the industry, but also induces the overall economic Growth (Lee & Chang, 2008).

Therefore, stimulating economic Growth by the development of the tourism industry has frequently been taken as a major economic development strategy for the majority of developing countries. By dint of the growing importance of the tourism industry to the economy of a country, the matter to explore the causal relationship between tourism spending (a particular type of Export) and economic Growth has drawn more recent attention. However, the presence of a strong correlation does not necessarily imply a causal relationship. In general, the causal relationship can be one of the tourism spending to economic Growth, economic Growth in tourism spending, in either directions, or absence of causal link entirely. Indeed, understanding the causal relationship between tourism spending and economic Growth is important in the design and implementation of tourism policies. According to the trade-economic Growth relationship theory, the causal relationship between tourism spending and economic Growth has been synthesized into three testable hypothesizes within the literature: tourism-led economic Growth hypothesis, economic-driven tourism Growth hypothesis, and reciprocal causal hypothesis (Oh, 2005). The hypothesis of tourism-led economic Growth acknowledges a unidirectional causality relationship of the expansion of tourism to economic Growth. The assumption of economic Growth based on tourism, a unidirectional causality relationship from economic Growth to the expansion of tourism is evident.

Whilst, the mutual hypothesis asserts that the causal link between economic Growth and the expansion of tourism seems to be bi-directional, this implies that pressures in two areas are beneficial. Averring the causal relationship between economic Growth and the expansion of tourism has an enormous importance because it can furnish useful implications for the pertinent policy decisions. Although if there is no causal link between the expansion of tourism and economic Growth might be found, it provides an idea to reflect on the effectiveness of strategies for the tourism promotion.

A significant issue is, is there a long-run relationship between tourism spending and economic Growth? The reply to this query is the reason for the ranking of articles published in these relationships.

The remnant of this paper is organized as follows. Section 2 shows the study of the literature on tourism spending and economic Growth. Section 3 presents the data used in this study. Section 4 describes the methodology. Section 5, 6, 7 and 8 bring to light respectively why test the panel unit root, the approach of the Co-integration, estimating the long run cointegration relationship in a panel context, the Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS) estimators and Panel Granger Causality. Section 9 reports the results from the empirical results analyses. Finally, conclusions and policy implications are presented in Section 10.

2. Study of the literature on Tourism Spending and economic Growth

Since the past several decades, it was the highlighting of the international tourism for the reason of that the international tourism has been steadily increasing as well as the weight of the tourism industry for the economy of many countries whether developed or developing countries. Although the weak global economic performance and the economic problems of the Arab Spring in 2011, the number of international tourists traveling worldwide attained

995 million in 2011, also this number increased and achieved 1035 million, an increase of 40 million from 2011 for an annual Growth of 4.0 percent (World Tourism Organization, 2013)*.Overall tourism revenues were 1034 billion U.S. dollar (U.S. $) for 2011 and 1075 billion U.S. $) in 2012. Such as, it is well known, every recent study has in its folds, which are searches previously considered a good basis for a good start made, we can also find that these studies have helped to extract new hypotheses.

2.1 The work of the pioneers

There are, however, some early studies which have focused explicitly on tourism's economic contribution, whom are considered the pioneers in this field, there may be mentioned: Gray's study (1966), for example furnished per capita income elasticities of 6.6 for Canadian demand for tourism in the rest of the world and 5.13 for US demand. Fundamentally, Sinclair (1998), pointed out in other early studies which focused explicitly on tourism's economic contribution to developing countries (Archer, 1995; Bryden, 1973; Heng & Low, 1990) that are linked with estimating of tourism demand and generating income through the multiplier process. In accordance with Archer (1976), Johnson and Ashworth (1990) and Sheldon (1990), the majority of studies trying to estimate tourism demand have used single equation models and have attempted to explain demand on the basis of tourism receipts or arrivals.

Furthermore, studies which analyze the multiplier effects of tourist expenditure constitute one of most well documented in the economics literature of tourism (Fletcher & Archer, 1991) zones. The overriding approach taken to evaluate the economic impacts of changes in tourism expenditure was based upon the input-output analysis, on computable general equilibrium models, and the Tourism Satellite Account (Dwyer, Forsyth and Spurr, 2004; Ivanov& Webster, 2007).

Sinclair also notes that there are a broad number of studies which while not expressly revolve around the topic of tourism's role in the development of a country, but are indirectly relevant to it. Some studies show that the potential of tourism on Growth is based, in large part, on its provision of foreign currency earnings and corresponding reduction in the BOP constraint. Although there is considered that Foreign currency earnings from tourism may also be used to import capital goods to order to produce goods and services, which in turn drives to economic Growth (McKinnon, 1964). More economic benefits flowing of tourism comprise tax receipts, jobs and additional sources of income (Archer, 1995; Belisle& Hoy, 1980, Davis, Allen, and Consenza 1988; Durbarry 2002; Khan, Seng and Cheong, 1990; Uysal and Gitelson, 1994; West, 1993). It is generally recognized which the expansion of tourism should have a positively contribution to economic Growth. Economic development contributes significantly to Growth in tourism. Ghali (1976) and Lanza and Pigliaru (2000) were the first to examine the relationship between tourism and the Growth of an empirical standpoint, while Cantavella-Balaguer and Jorda (2002) were the first to analyze the TLG hypothesis, where they prove the validity of the TLG hypothesis with the Spanish economy where the Spanish economy is the second largest recipient of international tourist earnings (5.9% of its GDP) in the world after the United States. However, it is still unclear if this hypothesis can be proved for the other countries. Therefore, investigation of the TLG hypothesis deserves further attention from researchers.

2.2 Synthesis of recent works in the relationship between Tourism and GDP

The causal relationship between tourism and economic Growth is well documented in the literature of tourism economics. Different studies focused on different countries, sample periods, variables and different econometric techniques and provide inconclusive results (see Table 1). The findings of the different studies can be summarized into four main hypotheses:

1- Tourism-led Growth

2- Growth-led tourism hypothesis.

3- Feedback hypothesis indicates that there is bidirectional causality between inbound tourism and economic Growth.

4- Fourth, neutrality hypothesis holds when no causality exists between international tourism and economic Growth. Among these various studies mentioned in table 1, we can properly identify some studies of countries distributed across different continents.

Lee and Chang (2008) examined the causal link between tourism development and economic Growth for OECD and non-OECD countries (including those in Asia, Latin America and Sub-Saharan Africa) to over the period 1990-2002. Evidence gathered in their study indicates that there is a one way causal relationship between tourism development and economic Growth in the OECD countries, a bidirectional relationship in the OECD countries and non-just a weak relationship in Asia.

Into a multi-country study. Chiou-Wei and Chen (2009), show over the period of 1975:Q1–2007:Q1 that the tourism-led economic Growth hypothesis was supported for Taiwan with a reciprocal causal relationship found for South Korea. An EGARCH-M model with uncertainty factors is employed to examine the direction of causality between tourism expansion and economic Growth.

Seetanah (2010), study represented the possibility of a dynamic link between tourism and Growth through the use of a dynamic panel data framework of island countries over the 1990-2007 periods, namely methods of GMM (GMM) method. The results of the analysis revealed that tourism development is a major factor in explaining economic performance in island economies and the results are consistent with earlier work on developing countries by Gunduz and Hatemi (2005) and Tosun (1999) for the case of Turkey, Kim et al. (2006) for Taiwan, Eugenio-Martin et al. (2004) for a sample of Latin American countries, Brau et al. (2004, 2007) and in particular that of Durbarry (2004) for the case of Mauritius.

Holzner (2011) analyzes empirically the risk of a Dutch disease effect in the tourism-dependent countries over the long term. Data on 134 countries of the world during the period 1970-2007 are used. The long-term relationship between tourism and economic Growth are analyzed in a cross-country context. Outcomes are then checked in a framework of panel data on the levels of GDP per capita, which is used to control for reverse causality, non-linear and interactive effects. It is that there is no danger of an impact of the disease Beach. In contrast, countries that depend on tourism does not deal with the distortion of real exchange rate and industrialization, but have higher than average economic Growth rate. The investment in physical capital such as transport infrastructure is complementary to investment in tourism.

Yang (2012), he investigates the relationship between tourism agglomeration and tourism development. His study conducts to a dynamic panel data analysis using data on Chinese provincial tourism industry for 2000 -2009 periods, and investigates the dynamic effect associated with tourism agglomeration density. He is concluded that the dynamic panel data models better fit research questions that combine provincial tourism and spatial characteristics simultaneously, especially because they allow province-specific characteristics to be differently linked to their regional contexts. Using panel data for tourism industry in 31 Chinese provinces, the estimation of a tourism production equation sheds light on several issues. Briefly, his investigation finds the evidences of the dynamic mechanism in the tourism industry development, and the econometric results lend support to hypothesis that there is a positive impact of provincial tourism agglomeration density and its development in this research.

Sharma and Bannigidadmath (2013), examine whether the number of visitors predict macroeconomic variables for panels PIC, namely, Fiji, Solomon Islands, PNG, Vanuatu, Samoa and Tonga over the 1985- 2010 periods. They propose a predictive model for panel regression with two variables where visitor arrivals are the predictor variable and macroeconomic variables are the dependent variables. Motivated by a growing number of studies showing that tourism development has economy-wide effects influencing the performance of the macro-economy, and consider a broad range of macroeconomic variables. We have a total of 11macroeconomic indicators. Using a model predictive data panel regression proposed by Westerlund and Narayan (2012a). They find that in the complete panel of the six countries, and in the panels from which they exclude countries one by one, Visitor arrivals systematically predict exports and the money supply and to a lesser extent exchange rate and GDP.

Table1: Review of literature on the causality between GDP and TS

Authors (Year)	Period of	Econometric	Country coverage	Causal
Narayan Sharma and Bannigidadmath(2013)	1985 - 2010	panel data predictive regression model	Pacific Island countries	Tourism →Growth
Holzner(2011)	1970–2007	Ordinary least	134Countries	Tourism →
Tiwari(2011)	1995–2008	Fixed and random effect models	China,Pakistan,Russia,andIndia	Tourism → Growth
Fayissa et al. (2011)	1990 - 2005	Dynamic panel data analysis	18 Heterogeneous Latin American countries	Tourism → Growth
Schubert and Brida (2011)	1970 - 2008	VECM and Granger	Antigua, Barbuda	Tourism →
Seetanah(2010)	1990–2007	GMM–Granger	19 Islands	Tourism →
Chiou-Wei and Chen (2009)	1975 - 2007	EGARCH-M model	Taiwan and South Korea	Tourism →Growth(for Taiwan)
NevesandPaula(2008)	1982–2002	GMM and LSDV	94 Countries	Tourism →
PoandHuang(2008)	1995–2005	Threshold autoregressive model	88 Countries	Tourism → Growth
LeeandChang(2008)	1992–2002	Panel co-integration	OECD countries	Tourism →
Lee and Chang (2008)	1992– 2002	Panel co-integration	Non-OECD countries	Tourism ↔ Growth
AdamosandSofranis(2005)	1981–2004	Fixed effect	162Countries	Tourism →
SkerritandHuybers(2005)	1965–1992	Ordinary least	37 Developing	Tourism →
Eugenio-Martin and Morales (2004)	1980 –1997	Panel GLS	Low- and medium Income Latin American countries	Tourism → Growth
Eugenio-Martin and Morales (2004)	1980 –1997	Panel GLS	High- income Latin American countries	Tourism ≠ Growth
Lanzaetal.(2003)	1977–1992	Almost ideal demand systems	13 OECD countries	Tourism → Growth

Note:

"Tourism→ Growth" denotes causality running from tourism development to economic Growth.

"Growth → Tourism" denotes causality running from economic Growth to tourism development.

"Growth ↔ Tourism" denotes bidirectional causality between tourism development and economic Growth.

"Tourism ≠ Growth" denotes that neither tourism is effecting Growth nor Growth is effecting tourism.

3. Data

All data used in this study are annual observations covering the period from 1988 to 2012 obtained from two sources. Data on GDP per inhabitant at current prices (U.S. dollars) are obtained from the World Bank; GDP per inhabitant is particularly useful when comparing one country to another, because it shows the relative performance of countries. An increase in GDP per inhabitant indicates a growing economy and tends to lead to an increase in productivity. The Tourism Spending (Ts) defined in US dollar billions is extracted from the World Bank Development Indicators (WDI). Our database includes 49 countries. We classify all countries into only one heterogeneous panel to examine if there are any structural differences.

4. Methodology

In the analysis of the relationship in long-term panel data, the choice of the appropriate technique is an important theoretical and empirical question. Co-integration is the most appropriate technique to study the long-run relationship between tourism spending and gross domestic product (GDP). The empirical strategy used in this paper can be divided into four main stages. First, unit root tests in panel series are undertaken. Second, if they are

integrated of the same order, the co-integration tests are used. Third, if the series are co-integrated, the vector of co-integration in the long term is estimated by using the methods (FMOLS) and (DOLS).Fourth, after estimating the long run relationship using FMOLS and DOLS methods, we proceed to Panel Granger Causality.

5. The approach of the Co-integration

The concept of co- integration can be defined as a systematic co-movement between two or more variables in the long term. According to Engle and Granger (1987), if X and Y are both non-stationary, it was expected that a linear combination of, X and Y is a random step. However, the two variables can have the propriety that a particular combination of them $Z = X - By$ is stationary. If this propriety is true, we say that Xand Yare co-integrated.

5.1 Panel Co-integration

It is now acknowledged in the econometric literature that the best methods for testing unit roots and co-integration are to use methods based on a panel. These methods greatly increase the power of the tests and often involve a two-step procedure.

The first step is to test the unit roots panel; the second is the co-integration tests in panel.

For the 49 countries in our empirical study, heterogeneity may arise due to differences in the degree of economic and development conditions of each country. To ensure wide applicability of any co-integration panel test, it is important to take into account as much as possible heterogeneity between group members. Pedroni (1997, 1999, 2004) has developed a method of co-integration panel based on residues that can take into account the heterogeneity in individual effects, the slope coefficients and individual linear trends between countries. Pedroni (2004) considers the following type of regression:

$$y_{it} = a_i + \delta_i t + \beta_i X_{it} + e_{it} \quad (1)$$

We consider for each panel, time series y_{it} and X_{it} for the members $i = 1, \ldots, N$ and for periods of time $t = 1, \ldots T$. The variables y_{it} and X_{it} are supposed to be integrated of order one, denoted I (I). the parameters a_i and δ_i they allow the opportunity to observe the individual effects and individual linear trends, respectively. The β_i slope coefficients are allowed to vary from one member to another, so in general, the co-integration vectors may be heterogeneous among the panel members. Pedroni (1997) proposes seven statistics to test the null hypothesis of no co-integration in heterogeneous panels. These tests include two types of tests. The first is the Co-integration tests panel (within-dimension). Within tests dimensions consist using four statistics, namely panel v-statistic, panel ρ-statistic, panel PP-statistic, and panel ADF-statistic. These statistics pool the autoregressive coefficients across different members for the unit root tests on the estimated residues, and the last three test statistics are based on the "between" dimension (the "Group"). These tests are group ρ, group PP, and group ADF statistics.

6. Estimating the long run co-integration relationship in a panel context

After confirmation of the existence of a Co-integration relationship between the series, it must be followed by the estimation of the long-term relationship. There are different estimators available to estimate a vector Co-integration panel data, including with and between groups such as OLS estimates, fully modified OLS (FMOLS) estimators and estimators dynamic OLS (DOLS).

In the Co-integrated panels, using the technique of ordinary least squares (OLS) to estimate the long-term equation leads to biased parameter estimates unless the regressors are strictly exogenous, so that, the OLS estimators cannot generally be used for valid inference.

7. Panel Granger Causality

Panel Co-integration method tests whether the existence or absences of long-run relationship between GDP and tourism spending for the 49 countries. It doesn't indicate the direction of causality. When Co-integration exists

among the variables, the causal relationship should be modeled within a dynamic error correction model Engle and Granger (1987).

The main purpose of our study is to establish the causal linkages between GDP and tourism spending, the Granger causality tests will be based on the following regressions:

$$(1-L)\begin{bmatrix} GDP_{it} \\ TS_{it} \end{bmatrix} = \begin{bmatrix} a_{i\,GDP} \\ a_{i\,TS} \end{bmatrix} + \sum_{i=1}^{P} (1-L)\begin{bmatrix} \vartheta_{11ip} & \vartheta_{12ip} \\ \vartheta_{21ip} & \vartheta_{22ip} \end{bmatrix}\begin{bmatrix} GDP_{it-p} \\ TS_{it-p} \end{bmatrix} + \begin{bmatrix} \beta_{GDP_i} \\ \beta_{TS_i} \end{bmatrix} ECT_{t-1} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \quad (2)$$

ECT_{t-1} is the error-correction term, p denotes the lag length and $(1-\mathrm{L})$ is the first difference operator and ECT_{t-1} stands for the lagged error correction term derived from the long run Cointegration relationship. An error correction model enables one to distinguish between the long run and short run Granger causality. The short term dynamics are captured by the individual coefficients of the lagged terms. Statistical significance of the coefficients of each explanatory variable are used to test for the short run Granger causality while the significance of the coefficients of ECT_{t-1} gives information about long run causality. It is also desirable to test whether the two source of causation are jointly significant.

8. Empirical results

The general specification of the model which we estimate can be written as follows:

$$y_{it} = a_{0i} + b1iX_{it} + \varepsilon_{it} \quad (3)$$

With: y is the gross domestic product of country i, for the period t, X is also the tourism spending of country i, given at the period t, ε is an error term. This equation is considered as a balanced long-term relationship if she has cointegration relations. The data must then be integrated in the same order.

We will test the stationarity and the relationship of long-term series of GDP and tourism spending, the technical unit root and co-integration panel data require a minimum of homogeneity in order to draw more general conclusions. It is for this reason that we break our sample into two sub-groups, to draw more appropriate conclusions.

For precision variables are abbreviated as follows: GDP: gross domestic product. TS: Tourism spending.

8.1 Panel approach:

8.1.1 Unit root tests:

To investigate the stationarity of the series used, we use the unit root tests on panel data (LLC, IPS, BRT, and MW). The results of these tests are presented in the following tables:

Table 2: Unit root tests for the variables in Forty Nine countries

Null: unit root							Null: NO	unit root
Methods		Levin, Lin and Chu (LLC)	Breitung t-stat	Im, Pesaran And Shin (IPS) W-stat	MW–ADF Fisher Chi-square	MW–PP Fisher Chi-square	Hadri Z-stat	Heteroscedastic consistent Z-stat
Variables								
Level	LOGGDP	-1.96844	2.98507	-0.00345	134.763*	70.7567	16.3431*	11.7757*
		(0.0245)	(0.9986)	(0.4986)	(0.0082)	(0.9827)	(0.0000)	(0.0000)
	LOGTS	2.29855	0.49546	-1.37556	136.767*	104.591	15.0258*	11.9702*
		(0.9892)	(0.6899)	(0.0845)	(0.0059)	(0.3057)	(0.0000)	(0.0000)
First difference	ΔLOGGDP	-11.8613*	-9.8149*	-10.6954*	280.400*	309.944*	8.10333*	9.44396*
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

ΔLOGTS	-11.802* (0.0000)	- 13.091* (0.0000)	-17.179* (0.0000)	454.858* (0.0000)	768.959* (0.0000)	5.54804* (0.0000)	10.2508* (0.0000)

* Significance at 1%. Δ is the first difference operator.

All variables are non-stationary panel in level, but in first differences all variables are stationary. The stationarity for all countries in the first difference leads us to study the existence of a long-term relationship. Therefore, we find that all variables are integrated of order 1.

8.1.2 Co-integration:

We have seen that all variables are integrated of the first order, Based on these test results panel unit root, we proceed to test co-integration panel, and that by relying on tests Pedroni. The results are as follows:

Table 3: Co-integration tests for the FOURTY NINE COUNTRIES

Methods	Within dimension (panel statistics)			Between dimension (individuals statistics)		
	Test	Statistics	Prob	Test	Statistics	Prob
LOGGDP LOGFDI						
Pedroni (1999)	Panel v-statistic	2.761674	0.0029	Group ρ-statistic	3.954378	1.0000
	Panel rho-statistic	-1.090639	0.1377	Group pp-statistic	1.376523	0.9157
	Panel PP-statistic	-4.243358	0.0000	Group ADF-statistic	-1.765700	0.0387
	Panel ADF-statistic	5.152775	0.0000			
Pedroni (2004) (Weighted statistic)	Panel v-statistic	3.979648	0.0000			
	Panel rho-statistic	2.017398	0.9782			
	Panel PP-statistic	-0.021295	0.4915			
	Panel ADF-statistic	-1.442202	0.0746			

* Significance at 1%. Δ is the first difference operator.

The table summarizes the results of seven (07) Statistical Co-integration Pedroni, four probability values are less than 5%. It is mainly (Panel v-statistic), (Panel pp-Statistic) and (Panel ADF-Statistic) regarding intra-individual tests, and we have (Group ADF-Statistic) for testing inter-individual, all this proves that there is a relationship of co-integration between the variables in the model.

The results obtained show the relevance and power of co- integration tests in panel compared to the tests of time series. In this step, we estimate the long-term relationships pooled and grouped using FMOLS methods and DOLS estimators Proposed by Pedroni (2000, 2001) and Mark and Sul (2002) FMOLS and DOLS estimators give different results. It is important to note that the DOLS method has the disadvantage of reducing the number of degrees of freedom including leads and lags in the variables studied, which leads to less reliable estimates. As the size of our sample is important especially in the temporal dimension, the estimated DOLS can give acceptable results.

8.1.3 Estimated long-term relationship with DOLS / FMOLS methods:

The results of individual tests and FMOLS are presented in Table 4.

Table 4: Estimated long relationship for THE FOURTY NINE COUNTRIES

Dependent Variable LOGGDP	FMOLS Independent Variable		DOLS Independent Variable	
	LOGTS (probability)		LOGTS (probability)	
	Pooled estimation	Grouped estimation	Pooled estimation	Grouped estimation
Heterogeneous panel	4.528055 (0.0042) *	635.1113 (0.0000) *	26.38888 (0.0000) *	733.2013 (0.0000) *

*Significance at 1%, ** 5%.

As mentioned above, we used two techniques for obtaining estimates of parameters of the long-term relationship between GDP per inhabitant and tourism spending; Table 3 presents the results FMOLS and DOLS. The coefficients of the heterogeneous panel in pooled estimation and grouped estimation are positive and statistically significant at the 1% significance whatsoever for FMOLS method or the DOLS, and given the variables are expressed in natural logarithms, the coefficients can be interpreted as elasticity. Overall, the results of this study show that there is a strong long-term relationship between GDP per inhabitant and tourism spending.

The results obtained for the all heterogeneous panel in pooled and grouped estimation suggest that a 1% increase in tourism spending increases the GDP, respectively, 4.528055 % and 635.1113 %, these results highlight the involvement of tourism spending to gross domestic production.

8.1.4 Panel Granger causality results

Having established that the GDP is Co-integrated in the long-term with tourism spending, this step is done objectively to examine the causal relationship between these variables, the following table summarize all the results of causality, the optimal structure of delays was established using the Akaike and Schwarz information criteria.

Table 5: panel causality test results

Lags 4	TS
GDP	6.22083* (0.0268) ←
	10.7647* (0.0000) →

The table shows that there is a cause and effect way, summary Granger causality runs from GDP to tourism spending for different countries and vice versa. In other words, the assumption of feedback (bidirectional relationship between GDP and tourism spending in which the causality goes along in both directions) is confirmed for these countries. Therefore, the impact from the tourism spending will affect the GDP and vice versa.

9. Conclusions and policy implications

This paper empirically tests the validity of the TLG hypothesis for 49 countries by using panel cointegration test and panel causality. Results suggest that the TLG hypothesis has been approved in a meaningful way. The FMOLS and DOLS tests have confirmed the long-term equilibrium relationship between tourism spending and economic Growth (GDP per capita). As well as Holzner (2011) and Narayan Sharma and Bannigidadmath (2013), this study

validates the TLG hypothesis for 49 countries. Finally, these results are of great importance for policy makers and academics.

These results may help a government to establish priorities regarding to the assignment of the resources for national strategies to economic Growth and development of tourism. In addition, the results for the uncertainty effects can provide information on the impact of news, especially bad news on tourism demand. Future research should focus upon the modeling of the relationship between various characteristics of a country that influence tourism's contribution to Economic Growth.

Although it appears to have no evidence that the destination competitiveness, as measured by the WEF, plays a role in influencing tourism contribution of tourism to economic development.

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